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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/658,755      | 09/10/2003  | Sung-Jae Cho         | 1568.1074           | 3407             |

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STEIN, MCEWEN & BUI, LLP  
1400 EYE STREET, NW  
SUITE 300  
WASHINGTON, DC 20005

EXAMINER

ONEILL, KARIE AMBER

|          |              |
|----------|--------------|
| ART UNIT | PAPER NUMBER |
|----------|--------------|

1746

DATE MAILED: 03/14/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                        |                     |  |
|------------------------------|------------------------|---------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b> | <b>Applicant(s)</b> |  |
|                              | 10/658,755             | CHO, SUNG-JAE       |  |
|                              | <b>Examiner</b>        | <b>Art Unit</b>     |  |
|                              | Karie O'Neill          | 1746                |  |

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 10 September 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)               | Paper No(s)/Mail Date. _____  |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>9-10-03</u> .   | 6) <input type="checkbox"/> Other: _____                                    |

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-4 and 6-9 and 11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okada et al. (US 6,045,944) in view of Iwata et al. (US 6,447,949 B2).

Okada et al. discloses in Figure 1, a battery unit (prismatic battery) formed by rolling a stack of a negative plate (6), a separator (7), and a positive plate (8) and inserting it into an outer jacket (2) or can structure; a cap assembly (1), comprising: a cap plate (3) having a port aperture (10) and an electrolyte injection hole (11); an electrode port (12) which engages the port aperture; a gasket (13) installed to surround the electrode port to insulate the electrode port from the cap plate (column 4 lines 9-13); an electrode tab (14) drawn out from the negative plate and electrically connected to the electrode port (column 4 lines 9-13).

Okada et al. does not disclose a plug which is plugged into the electrolyte injection hole by pressing and having an upper rim that matches an upper edge of the electrolyte injection hole, the electrolyte injection hole comprising first a second tapering portions with different slopes; and the plug comprising a body and an extension extending from the body, wherein the body of the plug contacts the first tapering portion tightly and the extension contact the second tapering portion tightly when the plug is pressed into the electrolyte injection hole, wherein a top surface of the plug is aligned with a top surface of the cap plate when the plug is fitted into the electrolyte injection hole and a boundary between the electrolyte injection hole and the plug is sealed by welding after the plug is fitted into the electrolyte injection hole, so that a welded portion is formed along the boundary.

Iwata et al. discloses in column 5 lines 31-35 and Figures 1-2 and 4-10, an electrolyte injecting plug (3) which is plugged into the electrolyte injection hole by pressing such that an upper end surface of the electrolyte injecting plug is flush with the upper side edge of the electrolyte injecting port (2) and doesn't protrude from the battery case cover portion (1b). He discloses the electrolyte injection port (2) comprises the electrolyte injecting port and the electrolyte injecting plug are tapered (Figure 5 and column 4 lines 35-38); and as can be seen in Figure 7, the plug comprises a body and an extension from the body wherein the body of the plug contacts the first tapering portion tightly and the extension contacts the second tapering portion tightly when the plug is pressed into the electrolyte injection hole. He also discloses a boundary between the electrolyte injection hole and, the plug is sealed by welding after the plug is

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fitted into the electrolyte injection hole, so that a welded portion is formed along the boundary (column 5 lines 35-42).

Okada et al. and lwata et al. are analogous art because they are from the same field of endeavor, batteries. At the time of the invention it would have been obvious to one of ordinary skill in the art to use a plug, as in the lwata et al. reference, that is tapered and flush with the top of the battery cap plate of Okada et al., for the purpose of forming a tight seal with little or no gap between the electrolyte injection hole and plug so that electrolyte does not leak from the hole (lwata et al. column 5 lines 30-42).

Claims 1-3, 5-8, 10-12 and 14-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okada et al. (US 6,045,944) in view of Watari (JP 2001-313022).

Okada et al. discloses in Figure 1, a battery unit (prismatic battery) formed by rolling a stack of a negative plate (6), a separator (7), and a positive plate (8) and inserting it into an outer jacket (2) or can structure; a cap assembly (1), comprising: a cap plate (3) having a port aperture (10) and an electrolyte injection hole (11); an electrode port (12) which engages the port aperture; a gasket (13) installed to surround the electrode port to insulate the electrode port from the cap plate (column 4 lines 9-13); an electrode tab (14) drawn out from the negative plate and electrically connected to the electrode port (column 4 lines 9-13).

Okada et al. does not disclose a plug which is plugged into the electrolyte injection hole by pressing and having an upper rim that matches an upper edge of the electrolyte injection hole, the electrolyte injection hole comprising first a second tapering

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portions with different slopes; and the plug comprising a body and an extension extending from the body, wherein the body of the plug contacts the first tapering portion tightly and the extension contact the second tapering portion tightly when the plug is pressed into the electrolyte injection hole, wherein a top surface of the plug is aligned with a top surface of the cap plate when the plug is fitted into the electrolyte injection hole and wherein an outer surface of the plug is coated with a polymer, and the plug is fitted into the electrolyte injection hole by pressing. He does not disclose the plug wherein the electrolyte injection hole tapers from a first hole toward a third hole via sections having different slopes, wherein the electrolyte injection hole includes a first tapering portion between the first hole and a second hole and a second tapering portion between the second hole and the third hole, wherein the first tapering portion is more tapered than the second tapering portion to create a wider entry than exit, and wherein the body has a thickness that is substantially equal to a distance from an entry of the electrolyte injection hole to a boundary between the first and second tapering portions. He also does not disclose the plug wherein a size of the body is one of: a size that fits the first tapering portion of the electrolyte injection hole; and a size slightly larger than the first tapering portion so that the body is fitted by pressing and wherein the extension extending downward from the body is smaller in diameter than the body and fits into the second tapering portion of the electrolyte injection hole by pressing.

Watari discloses, a metal cell container, which contains a rolled object of a positive electrode, a separator and a negative electrode (paragraph 0012). In Drawing 3, Watari discloses a plug (42), being made of a fluororubber and/or EPDM, a polymer

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(paragraph 0023), which is plugged into the electrolyte injection hole (1) by pressing (paragraph 0026) and having an upper rim that matches an upper edge of the electrolyte injection hole (1), the electrolyte injection hole (1) comprising first and second tapering portions with different slopes; and the plug comprises a body (41) and an extension extending from the body (42), wherein the body (42) of the plug contacts the first tapering portion tightly and the extension contacts the second tapering portion tightly when the plug is pressed into the electrolyte injection hole (paragraphs 0025-0026). As can be seen in Drawing 3, he discloses the injection hole tapering from a first hole or cell container surface (2) toward a third hole or bottom of the pore (12) via sections having different slopes, wherein the electrolyte injection hole includes a first tapering portion between the first hole (2) and a second hole (11) formed by the circle-like crevice formed in the upper part of the injection hole, and a second tapering portion between the second hole (11) and the third hole (12), and wherein the first tapering portion is more tapered than the second tapering portion to create a wider entry than exit or the path is small toward the cell container inside (paragraph 0025). Watari discloses the body (41) of the plug having a thickness that is substantially equal to a distance from an entry of the electrolyte injection hole to a boundary between the first and second tapering portions, the circle-like crevice formed in the upper part is constituted so that it may fit with the body (paragraph 0025), and wherein a size of the body is a size that fits the first tapering portion of the electrolyte injection hole and wherein the extension (42) extending downward from the body (41) is smaller in

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diameter than the body and fits into the second tapering portion of the electrolyte injection hole by pressing (paragraph 0026).

Okada et al. and Watari are analogous art because they are from the same field of endeavor, batteries. At the time of the invention it would have been obvious to one of ordinary skill in the art to use a plug, as in the Watari reference, that is tapered and flush with the top of the battery cap plate of Okada et al., for the purpose of forming a tight seal with little or no gap between the electrolyte injection hole and plug so that electrolyte does not leak from the hole as well and made from a polymer of nonaqueous electrolyte-proof material so that it doesn't react with the electrolyte in a manner which would corrode or ruin the battery (Watari paragraph 0023).

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Karie O'Neill whose telephone number is (571) 272-8614. The examiner can normally be reached on Monday through Friday from 8am to 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Barr can be reached on (571) 272-1414. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

KAO



**MICHAEL BARR**  
SUPERVISORY PATENT EXAMINER